Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
Establishment of Rules and Policies for the Digital Audio Radio Satellite Service in the 2310-2360 MHz Frequency Band	)	IB Docket No. 95-91 RM No. 8610 DA No. 01-2570

COMMENTS OF THE WCS COALITION

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SUMMARY

The WCS Coalition is heartened by the International Bureau's recognition of the fact that high power SDARS terrestrial repeaters will cause harmful interference to WCS and other licensed services, and its efforts to search for market-based mechanisms for resolving interference issues. Unfortunately, however, the fundamental premise underlying the Bureau's proposal is flawed because it substantially limits the protections afforded to WCS licensees in favor of SDARS licensees, contrary to the Commission's resolution of similar blanketing interference issues on prior occasions. Any resolution adopted in this proceeding must allow both WCS and SDARS licensees to make productive use of their spectrum as authorized by their licenses. As currently configured, however, the proposal runs dangerously close to reducing WCS to secondary status in its own band, and therefore it must be rejected.

The Bureau's proposal proceeds from the erroneous premise that compensation alone – and very limited compensation at that – is the appropriate answer to the problem created by the SDARS licensees' unilateral decision to build out high power networks. Faced with a very similar situation in this very frequency band, the Commission in 1997 imposed ***both*** a prospective 2 kW power limitation ***and*** a largely retrospective five-year total compensation obligation for legacy equipment to protect MDS/ITFS operators from potential interference from WCS networks operating 150 MHz away. Nonetheless, the Bureau has proposed essentially no power limitation and an eighteen-month period of only partial compensation for SDARS licensees operating as little as 4 MHz away from WCS. This departure from recent Commission precedent is both unexplained and inexplicable.

The Bureau has not even attempted to explain why its proffered "solution" would serve the public interest. Moreover, because the proposal does not cover customer premises equipment and many WCS markets will not be built out within the next 18 months, the proposed compensation scheme is largely illusory. Accordingly, although some of the Bureau's proposals have facial appeal, in truth they are ineffectual, arbitrary, and capricious. It is time to recognize that the emperor has no clothes.

As they have stated on many occasions in this proceeding, WCS licensees do not seek to prevent SDARS licensees from deploying terrestrial repeaters. Rather, they seek a regulatory regime in which both WCS and SDARS licensees can coexist and offer commercially viable services. They recognize that the SDARS licensees have – at their own risk – deployed high power nationwide repeater networks pursuant to experimental authorizations and have begun offering commercial services using those networks. While the Commission is under no obligation to approve the long-term operation of high power SDARS repeaters that were constructed without permanent authority, the WCS Coalition has proposed a transition plan that could allow the continued operation of such repeaters for over five years. That plan would ultimately restore regulatory parity and the 2 kW EIRP norm in the band at the end of that transition period unless all affected parties can reach market-based agreements. Because the operation of high power repeaters during the transition period may not involve any compensation, this approach is actually less of an imposition on the SDARS licensees than was the approach adopted to address WCS blanketing interference to MDS/ITFS systems. We continue to believe that this "sunset" proposal offers the most rational, sensible, and equitable solution under the circumstances and encourage the Commission to adopt it.

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INTRODUCTION

AT&T Wireless Services, Inc., BeamReach Networks, Inc., BellSouth Corporation, Metricom, Inc., Verizon Wireless, Inc., WorldCom, Inc., and the Wireless Communications Association International, Inc. (collectively, the "WCS Coalition")[1] hereby respond to the International Bureau's public notice ("PN") requesting further comment on selected issues regarding the authorization of terrestrial repeater networks in the satellite Digital Audio Radio Service ("SDARS").[2] Based on the substantial evidence in the record of interference imposed by SDARS terrestrial repeaters upon the WCS band, as well as its own recent precedent for dealing with such interference in this band, the Commission should reject the proposal set forth in the PN and adopt instead the "sunset" proposal made by the WCS Coalition over two months ago.

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1 AT&T Wireless, BellSouth, Metricom, Verizon Wireless, and WorldCom hold WCS licenses; BeamReach manufactures WCS equipment; and WCAI is a trade association that represents, among other wireless interests, WCS operators. They have consistently participated in this proceeding and submitted numerous technical studies on the interference issues.

2 Public Notice, Rep. No. SPB-176, 66 Fed. Reg. 58697 (Nov. 23, 2001) ("PN").

The WCS Coalition appreciates the opportunity afforded by the PN to provide additional analysis in this proceeding in an effort to find marketplace mechanisms to resolve spectrum management issues.[3] Unfortunately, the Bureau's "proposal" falls far short of the mark, primarily because the PN fails, at the outset, to correctly identify the problem at hand and the appropriate course for remedial action. Reading the PN alone, one would not know (1) that the SDARS licensees' unilateral actions have created the problem at hand, (2) that there is no quick or easy technical "fix" to the interference generated by high power SDARS repeaters, (3) that the Commission just four years ago addressed a similar issue in this band by imposing a 2 kW power cap, and (4) that the WCS licensees have proffered a detailed solution and draft rules that afford a rational, reasonable, and workable transition from the current quandary to a regime more consistent with the Commission's spectrum management objectives and past precedent. The ultimate goal of this proceeding should not be a retroactive validation of the SDARS licensees' actions, but rather establishing a glide path from where the 2.3 GHz band is now to where it ought to be going forward. As it stands now, the proposal contained in the PN runs dangerously close to reducing WCS to secondary status in its own band by making it technically and economically infeasible to implement the innovative services anticipated when the WCS spectrum was allocated and auctioned.

[3] Indeed, the WCS Coalition requested that the Commission analyze the substantial submissions in this four year-old proceeding and seek comment upon proposals made by parties and the Commission itself. *See, e.g.,* letter from WCS Coalition to Magalie Roman Salas (dated Oct. 4, 2001) ("WCS Sunset Letter").

DISCUSSION

I. The Record Evidence Demonstrates Conclusively That SDARS High Power Repeaters Cause Debilitating Interference to WCS.

The PN implicitly recognizes – as it must, based on the overwhelming evidence in the record -- that high power SDARS terrestrial repeaters generate blanketing interference or "brute force overload" to WCS receivers. Blanketing interference results when a transmitter in one frequency band operates at such high power that it overwhelms lower power signals in nearby bands and thereby creates an "exclusion zone" within which other services cannot operate. This phenomenon is well recognized, and the Commission routinely has adopted rules – for example, in the AM, FM, television, and Public Mobile Services (*e.g.,* cellular, paging) – to address brute force overload concerns.[4] The significant interference issues arise here because the SDARS band (2320-2345 MHz) sits in the middle of the two WCS bands (2305-2320 MHz and 2345-2360 MHz). Blanketing interference can be greatly reduced by either lowering the power of the interfering service or increasing the spectral spacing between the interfering and interfered services. Unfortunately, the latter is not an option here; in fact, the PN anticipates that SDARS repeaters will operate as little as 4 MHz from WCS spectrum.[5]

The WCS licensees have submitted substantial evidence in the record demonstrating the harmful effects of blanketing interference from SDARS repeaters to WCS base stations and customer premises equipment ("CPE").[6] Interference to CPE is

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4 *See* 47 C.F.R. §§ 22.353, 73.88, 73.318, and 73.685(d). *See also Amendment of Part 73 of the Commission's Rules to More Effectively Resolve Broadcast Blanketing Interference*, 11 FCC Rcd. 4750 (1996)(pending NPRM).

5 *See* 66 Fed. Reg. at 58698.

6 *See, e.g.,* Letter from Paul J. Sinderbrand to Magalie Roman Salas, dated Dec. 15, 2000, at Exhibit 1 ("Harter Analysis"); Letter from William M. Wiltshire to Magalie Roman Salas, dated Feb. 20,

especially problematic because CPE installations are more numerous than base stations and must be of a small enough size and cost to be acceptable to the average consumer. The type of filtering and other technological fixes that could address brute force overload would increase either (or both) the size or cost of CPE beyond the level of consumer acceptance.[7] Moreover, even with respect to base stations, high power SDARS repeaters would impose significant costs on WCS licensees who would be forced to identify and ameliorate actual points of interference and in all likelihood would have to deploy additional base stations to improve link margins.

The record also demonstrates that high power SDARS repeaters create intermodulation distortion ("IMD") as well.[8] IMD results from the mixing of two input signals in a nonlinear system, since the resulting output contains new frequencies that represent the sum and difference of the input signals and the sums and differences of their harmonics. As applied here to the case of a market served by SDARS repeaters deployed by both XM and Sirius, the third order intermodulation of the two signals can produce a

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2001, at App. A; Letter from Karen B. Possner to Magalie Roman Salas, dated May 18, 2001, at Exhibit 1. The SDARS licensees have asserted that WCS experiences no interference below 2kW. This assertion is flat out wrong. Technical analyses submitted by WCS licensees have focused on high power repeaters because they cause interference levels greatly in excess of that which is standard in the band. Surrounding licensees – including WCS – may operate at up to 2 kW EIRP, although most choose to operate at much lower powers. Accordingly, we believe that a power level that is neither more generous nor more stringent is appropriate for SDARS terrestrial repeaters in the band. The WCS licensees have never asserted that they will suffer no interference from sub-2 kW repeaters; rather, they have indicated that we are willing to accept such interference. *See, e.g.,* Harter Analysis at p. 9; Letter from William M. Wiltshire to Magalie Roman Salas, dated Feb. 20, 2001, at p. 8; Letter from WCS Licensees to Magalie Roman Salas, dated Sept. 7, 2001, at p. 3.

7 *See, e.g.,* Harter Analysis at p. 8; Letter from Karen B. Possner to Magalie Roman Salas, dated May 18, 2001, at p. 6; Letter from Spike Broadband Systems, Inc. to Magalie Roman Salas, dated May 23, 2001, at pp. 2-3; Letter from BeamReach to Magalie Roman Salas, dated May 30, 2001, at pp. 3-6.

8 *See, e.g.,* Harter Analysis at p. 9; Letters from BeamReach Networks *et al.* to Magalie Roman Salas, dated Aug. 21, 2001, Nov. 2, 2001, and Sept. 7, 2001.

product that falls within the WCS band. Yet the PN does not even mention, much less purport to address, IMD issues.

While the SDARS licensees have disputed the magnitude of the interference issues and the ability of WCS equipment design to handle it, they have not disputed that the interference is real. The PN reflects the Bureau's recognition of the problem. The next step is to determine how best to address it.

The manner in which the Commission chooses to resolve the issues presented here will have broad implications that extend far beyond the 2.3 GHz band. WCS was the Commission's first foray into true spectrum flexibility. The service rules permit licensees to choose from among a large number of potential services and regulatory classifications.[9] Construction rules provide further flexibility by allowing WCS licensees the entire term of their license to assess and develop the best use of the spectrum.[10] The Commission has demonstrated its intention to proceed toward greater flexibility in other spectrum bands.[11] If the Commission in this proceeding were to adopt rules that impose additional and severe constraints on the practical uses of WCS spectrum just four years after licensing, what effect will it have on the psychology of bidders in future auctions of flexible spectrum and the Commission's ability to recover for the American public the appropriate value for the spectrum? What assurance will future licensees have that their

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[9] WCS licensees may provide fixed, mobile, radiolocation, and satellite broadcast (SDARS) service, with a choice of regulatory treatment as a common carrier, non-common carrier, or broadcast service.

[10] Licensees are required only to make a showing of "substantial service" at the end of the initial ten-year term. *See* 47 C.F.R. § 27.14.

[11] *See, e.g., Principles for Reallocation of Spectrum to Encourage the Development of Telecommunications Technologies for the New Millennium*, 14 FCC Rcd. 19868, 19871 (1999) (flexible allocation "would permit reliance on the marketplace to achieve the highest-valued use of the spectrum" and "would also ensure that the Commission and its processes do not become a bottleneck in bringing new radio communications services and technologies to the public").

reasonable expectations will not be thwarted by subsequent regulatory fiat? The Commission should bear in mind the potential adverse consequences on the allocation and auction processes that could result if WCS spectrum rights are compromised.

II. The Licensing Regime for SDARS Repeaters Must Adequately Address the Interference Issues.

Having recognized at least part of the interference problem, the Bureau proposes an approach to address it. Unfortunately, however, the PN seeks to address the issue by "defin[ing] a compensation methodology for SDARS licensees to pay for the components necessary for WCS licensees to eliminate the effects of blanketing interference." In doing so, it makes the unstated but critical assumption that *compensation is the solution* when one licensee desires to operate at such disparate powers as to create brute force overload to its spectrum neighbors. Taking a step back, the issue before the Commission is more fundamental: ***how to manage interference so that neighboring licensees may both deploy service to the public as authorized by their licenses.***

The Commission dealt with blanketing interference in this band just four years ago. At that time, the issue was potential interference to MDS/ITFS operations from WCS networks, even though those systems operate in spectrum separated by 150 MHz or more. Significantly, the solution implemented by the Commission *involved* ***both*** *a 2 kW EIRP power limit and monetary compensation for the effected band.*[12]

In the MDS/ITFS context, the Commission faced two potential issues. First, it needed to address blanketing interference caused to thousands of older, legacy MDS/ITFS units already manufactured or deployed. Second, it needed to address such

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[12] *See Amendment of the Commission's Rules to Establish Part 27, the Wireless Communications Service*, 12 FCC Rcd. 3977 (1997)("*WCS Recon Order*").

interference going forward in light of improved equipment designs that the MDS/ITFS community had under development. [13] These two issues led to a binary solution. First, with respect to legacy equipment, the Commission established a five-year period during which WCS licensees would have to "bear full financial obligation to remedy interference" caused to MDS/ITFS systems.[14] The WCS rules specifically state both that "[r]esolution of [interference] complaints shall be at no cost to the complainant" and that, "[i]f the WCS licensee cannot otherwise eliminate interference caused to MDS/ITFS reception, then that licensee must cease operations from the offending WCS facility."[15] Second, the Commission observed that setting maximum power limits on WCS operations would provide MDS/ITFS equipment manufacturers and service providers with the necessary certainty to allow them to design and purchase more robust receiving installations going forward, and decided that 2 kW EIRP would be an appropriate limit for the 2.3 GHz band.[16]

Accordingly, the issue presented by SDARS blanketing interference is not novel. The Commission has valuable precedent before it, developed in this very frequency band just four years ago. The Bureau has proffered no justification for resolving the current blanketing interference issues in a different manner. To the extent the case is

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13 *Id.* at 3982-83. Legacy MDS/ITFS equipment tuned across the entire band from 2.15 to 2.6 GHz, making it especially and unnecessarily susceptible to interference from WCS operations. Recognizing this problem, the industry was already in the process of designing improved block downconverters that would give the equipment better frequency discrimination. In the present case, WCS licensees have based their equipment designs upon state-of-the-art technology and will not tune across the SDARS band, but still will suffer significant interference due to the close proximity of SDARS repeater spectrum (only 4 MHz of separation rather than 150 MHz).

14 *Id.* at 3984-85. *See also* 47 C.F.R. §§ 27.5, 27.58(a).

15 47 C.F.R. § 27.58(b) and (d).

16 *WCS Recon Order*, 12 FCC Rcd. at 3983-84.

distinguishable, it is because there are relatively few legacy WCS systems that need to be protected, and no plan for such systems to be replaced with newer technology. WCS is only now beginning to be deployed, with systems incorporating the latest technology. Consequently, only the second prong of the solution previously adopted– *i.e.,* a 2 kW power limitation rather than a compensation requirement – would be appropriate here. Nonetheless, the Bureau's PN acts on the assumption that a "compensation scheme" is the appropriate answer, without explaining why it would depart in this way from the "compensation and 2 kW power limit" approach applied to WCS to protect licensees operating 150 MHz – rather than 4 MHz – away.

Thus, even with respect to blanketing interference, the PN has too narrowly restricted its focus and therefore has failed to consider the full panoply of remedial action that should be taken in this case. Moreover, the PN has failed to address IMD issues in any way whatsoever. It is thus not surprising that the specific proposals made do not provide a sufficient or appropriately targeted response to the debilitating interference the SDARS licensees propose to inflict upon WCS licensees.

III. The Bureau's Proposal in the PN Is Seriously Flawed and Does Not Adequately Address SDARS Interference Issues.

The Bureau's PN proposes a regime in which the SDARS licensees would be allowed to deploy an unlimited number of low power repeaters ("LPRs") operating at 2 kW EIRP or less. They would also be allowed to continue operating the high power repeaters ("HPRs") at greater than 2 kW EIRP currently authorized pursuant to STA over the next 18 months.[17] These HPRs would be entitled to cause interference to WCS

[17] It is not clear, given the PN's reference to a repeater operating "at 40 kW with an omni-directional antenna," whether the Bureau intends to measure EIRP in a manner that depends upon the directivity of the antenna. *See* 66 Fed. Reg. at 58699. In this regard, it is instructive to note that

equipment operating within a Safe Harbor area defined by the power level contour that would be generated by a 2 kW EIRP LPR, based on the WCS receive system threshold characteristics. Outside that contour, the SDARS licensee would have a Liability Zone defined by the power level contour generated by the actual HPR EIRP, again based on the WCS receive system threshold characteristics.[18]

An SDARS licensee that receives a complaint of blanketing interference from a WCS system within the Liability Zone must compensate the WCS licensee for the cost of the components to protect its station receivers from blanketing interference. This obligation diminishes sharply over time, such that the apparent financial liability is only fully enforced during the first six months, decreased to 50% over the next six months, decreased again to 25% over the third six months, and extinguished altogether after 18 months. The PN does ***not*** propose recovery of any costs incurred in connection with ameliorating interference to CPE or for labor in redesigning and retrofitting equipment (base station or CPE), although it does ask whether such costs should be considered.

Had the Commission possessed sufficient information in its 1997 rulemaking -- prior to the SDARS licensees' nationwide "experimental" build-out -- to propose specific repeater rules, it is inconceivable that it would have proposed to allow operations up to 40 kW, twenty times the maximum power of immediately adjacent WCS licensees and guaranteed to cause debilitating interference, and developed the elaborate framework of

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the blanketing interference rule for FM broadcast stations (which the PN cites as a model) specifically precludes such an approach. *See* 47 C.F.R. § 73.318 ("For directional antennas, the effective radiated power in the pertinent direction shall be used").

[18] The PN refers to the "overload threshold of the affected WCS receiver" in defining the Safe Harbor and Liability Zone. *See* 66 Fed. Reg. at 58699. However, it does not define its use of the term "overload." That term could denote anything from the point at which the receiver goes into compression to the point at which it experiences a 1 dB rise in the noise floor, which was the metric used by the Commission in analyzing WCS issues. *See WCS Recon Order*, 12 FCC Rcd. at 3992.

zones and contours proposed in the PN in order to accommodate such a regime. This is especially true given the Commission's contemporaneous resolution of blanketing interference from WCS systems into MDS/ITFS systems. The real but unstated driver of the proposal is the existing high power SDARS deployment. Unfortunately, it has driven the PN in an arbitrary and capricious direction.

The PN totally ignores the technical information in the record of this proceeding that details IMD caused by high power SDARS repeaters, as well as the potential costs of remediating both IMD and blanketing interference (to the extent such remediation is possible).[19] Indeed, it is virtually unburdened by any analysis of or explanation for the structure of its proposals and the lines it has drawn. Two examples illustrate this point.

- First, the PN does not even attempt to explain (let alone justify) why an 18-month transition period is appropriate in this situation or why reducing the compensation obligation first to 50% and then to 25% before phasing it out entirely is a rational approach. Exactly what does the Bureau hope to accomplish and how does it believe that this regime will achieve its goals? Where is the evidence in the record that supports a dwindling compensation obligation over this particular time frame? Why is it that WCS – the party *suffering* the interference – should be made to bear the entire burden of that interference going forward after only 18 months?

- Second, the PN proposes to require SDARS operators to perform routine environmental evaluations wherever a given repeater's EIRP exceeds 2000 Watts.[20] But just four years ago, the Commission determined that RF public safety considerations required such evaluations for WCS stations exceeding 1640 Watts EIRP – including WCS transmitters in the SDARS service.[21] The

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19 Various members of the WCS Coalition have filed numerous analyses documenting the high cost and low efficacy of remediation strategies suggested by the SDARS licensees. *See, e.g.,* Harter Analysis at p. 8; Letters from BeamReach *et al.* to Magalie Roman Salas, dated Sept. 7, 2001 and Nov. 2, 2001.

20 *See* 66 Fed. Reg. at 58701.

21 *See Amendment of the Commission's Rules to Establish Part 27, the Wireless Communications Service*, 12 FCC Rcd. 10785, 10861 (1997) ("*WCS Rules Order*"). The threshold for other services in nearby bands, including MDS, ITFS, GWCS, narrowband PCS, cellular, and paging systems, is also 1640 W EIRP. *See* 47 C.F.R. § 1.1307.

> PN recognizes but does not attempt to explain this disparity – nor can we imagine why the laws of physics and the public safety considerations would be different in the 2305-2320/2345-2360 MHz WCS band as opposed to the 2325-2345 MHz band.

As a result, an objective reader is left with the sense that the Bureau's PN is designed not so much to reflect a reasoned response to the technical data in the record of this proceeding, but rather to legitimize actions undertaken by the SDARS licensees without the Commission's knowledge, under the guise of "experimental" authorizations, and admittedly at their own risk: the construction of nationwide, high power commercial terrestrial networks. The SDARS licensees are gambling that their unilateral acts will essentially force the Commission to give them rules that no one would have approved *a priori*. As currently drafted, the PN would reward that gamble at the direct expense of WCS licensees, other licensed operators, and American consumers of broadband wireless services, and the indirect expense of the Commission's spectrum management and auction responsibilities.

Moreover, even within the context of its own limited aim of establishing a compensation scheme, the PN is ineffectual at best since the "compensation" it proposes (1) captures only a fraction of the remediation costs, (2) applies for a very limited time, and (3) does not cover CPE, which is likely to be the largest financial issue. This is particularly striking given that the PN also proposes to require SDARS licensees to "bear the full financial obligation" to remedy blanketing interference to MDS/ITFS systems. In fact, the blanketing interference rule that the PN cites as its model specifically provides that remediation shall be at "no cost to complainant."[22] Thus, the proposed compensation rules, even on their own terms, are wholly inadequate.

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[22] *See* 47 C.F.R. § 73.318(b) (cited in 66 Fed. Reg. at 58700).

First and foremost, the proposal would appear to ignore at least half of the problem – namely, interference to CPE. WCS networks provide two-way communications, which means that interference on either end of the link renders the service commercially non-viable. If the goal is to require SDARS licensees to compensate WCS licensees for interference, there is no principled basis upon which to exclude CPE that is affected by terrestrial repeater operations. The record evidence demonstrates the substantial logistical, commercial, and capital costs of hardening WCS CPE to operate in the presence of HPRs.[23] The Bureau is not free to ignore the problem just because it would be difficult or expensive to resolve.

Second, what compensation obligation there is would cover only the "cost of components" used to address interference.[24] Such a regime would woefully undercompensate WCS operators who would be required to absorb the costs of designing equipment to integrate the new components and of sending personnel to retrofit or replace existing equipment – even assuming that such designing and retrofitting were commercially possible. Moreover, under the proposed phase-out of compensation, WCS operators would be required to bear the full load of this expense going forward. The Commission should not adopt rules that essentially allow one service to optimize itself by becoming an economic externality for another.

The Safe Harbor concept is also deeply flawed. It is based on the proposition that, because WCS licensees have expressed their willingness to allow SDARS repeaters

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[23] *See, e.g.,* footnotes 6, 7, and 19, *supra*. *See also* Comments of BellSouth, File Nos. SAT-STA-20010712-00063 and SAT-STA-20010724-00064 (Aug. 21, 2001). The WCS Coalition requests that the Commission incorporate the record in these related STA proceedings into the record of this rulemaking proceeding..

[24] *See* 66 Fed. Reg. at 58700.

to operate at 2 kW, WCS licensees should not be protected from any level of interference within the area where they would suffer some interference from a 2 kW repeater. This premise is erroneous. There is a tremendous qualitative difference – 13 dB of signal strength -- between operating near a 2 kW transmitter and operating near a 40 kW transmitter. The strategies that allow operation in the former case – the case that is the standard in the band -- are patently insufficient to overcome interference in the latter case. It is as if the Bureau were positing that a person who is willing to go out for a short walk in a light rain would also be willing to do so in a hurricane. In the former case, there are recognized and fairly simple steps that address the concern (*i.e.,* an umbrella, a raincoat); in the latter, a wise person would simply choose not to go out at all. By the same token, the Safe Harbor would essentially be a dead zone as far as WCS operators are concerned if it has a 40 kW repeater at its heart.

From a practical perspective, the PN also is unclear on the standard of proof that would be required to receive even this limited form of compensation. The PN at various points refers to "actual blanketing interference" and to interference "that prevents the provision of commercial service," and would appear to place the burden upon the effected licensee (WCS) rather than the interfering licensee (SDARS).[25] By contrast, under the FM blanketing rule, an FM station is assumed to cause blanketing interference within the established signal contour level.[26] The PN does not explain what must be shown, by whom, or to whose satisfaction, in order to qualify for compensation. Such

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[25] *Id.*

[26] *See* 47 C.F.R. § 73.318.

ambiguity invites dispute and threatens to place the Commission in the middle of private interference claims.

The proposed compensation period and phase-out are also illogical. The PN's approach gives WCS licensees limited, short-term relief from a comprehensive, long-term interference problem. In doing so, it essentially allows SDARS licensees to optimize the technical and economic aspects of their networks while imposing the costs of that optimization on WCS licensees. The Bureau has not explained any rationale for its phase-out approach. Moreover, the proffered "compensation" is almost entirely illusory, given the unstated but highly relevant fact that WCS licensees are still in the design phase of their networks and are not likely to have significant deployment within the 18-month compensation period. Under the terms of their licenses, WCS operators must deploy systems to provide substantial service in their licensed areas by August 2007 – a full five years after the compensation period would most likely end. The PN's proposal could well preempt such deployment before it even had a chance to begin in earnest.

The PN also requests comment on proposals to grandfather existing HPRs and "how to facilitate the future deployment of HPRs."[27] One can only wonder why the Bureau would want to perpetuate the existing situation and even exacerbate it with the deployment of yet more SDARS transmitters that are known to cause unnecessary but severe interference to other licensed services. Grandfathering existing HPRs would reward the SDARS licensees for the improper use of experimental authorizations to deploy unauthorized networks for commercial service. It would also create a new

[27] *See* 66 Fed. Reg. at 58700.

spectrum policy favoring a race to deploy nominally "experimental" systems in order to gain a regulatory advantage over licensees that deploy later. The Commission cannot desire to send such a message in this proceeding.

As the WCS Coalition has argued many times in this proceeding, the only appropriate ultimate power cap for SDARS repeaters is 2 kW – the standard in the band.[28] The parties would then be free – and would each have powerful incentives – to arrive at coordination agreements to allow HPRs wherever possible. Preserving the 2 kW nature of this band would best ensure that parties operate from a position of regulatory parity.

The SDARS licensees have not asserted that they cannot design and implement terrestrial repeater networks with LPRs that can perform the same functions as networks with HPRs. Rather, they have argued (1) that WCS licensees should prefer HPRs, and (2) that it would be expensive and inconvenient for SDARS licensees to replace their experimental high power networks with standard power systems. However, the WCS licensees in this proceeding have uniformly and resoundingly rejected the first argument, and the second argument should be no more availing. The expense already incurred by the SDARS licensees is not an appropriate factor in the Commission's deliberations, since those expenses were incurred at the licensees' own risk. Moreover, the one technical argument proffered by the SDARS licensees – that their networks depend upon a powerful "main" repeater to drive the timing of the other repeaters in the market – is not an inherent limitation in repeater design but rather a consequence of their unilateral

[28] The PN's suggestion that perhaps a 9 kW EIRP level would be an appropriate cap has no supporting technical basis. It is halfway between 2 kW and 40 kW, and would truly be a "split the baby" solution in every sense of the phrase.

decision to deploy a single frequency repeater architecture. Single frequency networks are being designed for *entirely terrestrial* digital broadcast systems in Europe, with smaller repeaters used to fill in gaps in coverage from the main transmitter – which in itself suggests what the SDARS licensees may actually be trying to achieve.[29] It is but one of any number of designs that could be used for repeater deployment. The question the Commission should focus on is not how it could contort its policies to accommodate HPRs, but rather how best to manage the transition to an all-LPR regime.

The PN proposes that SDARS licensees obtain prior approval to operate SDARS repeaters only when they fall outside international coordination agreements or fail to comply with the Commission's antenna structure and RF safety requirements.[30] The WCS Coalition submits that, while prior approval for LPRs would only be necessary in these special cases, ***all*** HPRs should be subject to a prior approval requirement. The SDARS licensees have analogized their use of terrestrial repeaters to the unlicensed use of repeater and booster stations in other services.[31] But FM booster stations may not operate at an effective radiated power ("ERP") that is more than 20% of the primary station's ERP and must provide protection from interference to first-adjacent channel stations.[32] In both the private land mobile service and the private fixed microwave service rules cited by Sirius, additional transmitters are limited to a maximum ERP of 5

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29 *See, e.g.,* Special Arrangement of CEPT relating to the Introduction of Terrestrial Digital Audio Broadcasting, Annex 2, § 5.3 (July 1995) (available at www.ero.dk/eroweb/findab/fine.htm).

30 *See* 66 Fed. Reg. at 58698.

31 *See, e.g.,* Reply Comments of American Mobile Radio Corp. at p. 21 (filed Oct. 13, 1995); Reply Comments of CD Radio at p. 4 (Jan. 21, 1998); Reply Comments of CD Radio at pp. 3-4 (June 27, 1997).

32 *See* 47 C.F.R. §§ 74.1235(c), 74.1204(g).

Watts and operators are explicitly responsible for correcting any harmful interference they cause to other systems.[33] The public mobile radio service requires pre-coordination and "[l]icensees must not allow any signal booster that they operate to cause interference to the service or operation of any other authorized stations or systems."[34] And the Commission found that individual licensing of signal boosters in the land mobile radio and paging services would be "burdensome and unnecessary" because the low transmitting power minimizes the potential for interference.[35]

To the extent that SDARS repeaters similarly are required to operate at a reasonable power level (*i.e.,* 2 kW), the WCS Coalition has already endorsed a blanket licensing approach. However, HPRs operating at up to 40 kW are not comparable to any other booster or repeater stations that are subject to blanket licensing. Accordingly, HPRs should be individually licensed (to the extent they are allowed at all). This will not impose an undue burden upon the Commission or the SDARS licensees because (1) there are only a limited number of HPRs being used, and (2) there is no reason why they cannot be authorized in batches in a manner similar to the STA.[36] Of course, as detailed below, if the Commission adopts a "sunset" approach there will be only a limited amount of HPR licensing in the future, and then only with the agreement of all affected parties

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33 *See* 47 C.F.R. §§ 90.219, 101.151.

34 *Id.* at §§ 22.150, 22.527.

35 *See Routine Use of Signal Boosters*, 11 FCC Rcd. 16621, 16631 (1996).

36 Surprisingly, the PN suggests that, after final rules in this proceeding become effective, the SDARS licensees should report any HPRs "that have been moved to an alternate location." 66 Fed. Reg. at 58699. Given that the STAs were granted for specific repeater characteristics at specific locations, any such movement would be a violation of those authorizations. However, if as reported in the press XM is now using only 800-850 repeaters rather than 1500 nationwide, XM should inform the Commission of which repeaters are actually in use and only be licensed for those transmitters. *See Communications Daily*, Nov. 15, 2001 at p. 7.

which would further diminish the prospect for contentious or protracted licensing proceedings.

IV. The WCS Coalition's "Sunset" Proposal Provides an Adequate and Appropriate Resolution of the SDARS Interference Issues.

Although it is not reflected in the PN, the WCS Coalition has proposed an alternative solution based on the concepts of regulatory parity and sound spectrum management. After a flexible transition from existing high power SDARS operations, the WCS "sunset" proposal would preserve the 2 kW regime of the 2.3 GHz band. But by permitting negotiations among licensees, it would allow the operation of market forces to determine where high power repeaters could operate efficiently. Because even LPRs create exclusion zones, WCS licensees have strong incentives to agree to deployment of one HPR rather than multiple LPRs where the logistics of the particular case result in less net interference.[37] Since it does not dictate a particular split in sharing the cost of SDARS terrestrial interference, the WCS proposal gives *both* parties strong incentives to minimize potential interference and reduce costs. As a matter of spectrum policy, this has the valuable effect of preserving equilibrium among spectrum neighbors and licensees. As a practical matter, it is both equitable and workable. And as a matter of administrative procedure, it is consistent with the approach taken by the Commission in 1997 to deal with prospective interference from WCS into MDS/ITFS.

[37] For example, WCS licensees may prefer a particular 20 kW repeater operating on the outskirts of town and pointed in a particular direction to multiple 2 kW repeaters operating downtown.

The WCS Coalition's sunset approach contemplates blanket licensing (with a notice requirement)[38] of standard power repeaters operating at or below 2 kW EIRP, and would require all of the following provisions for high power repeaters:

- No SDARS licensee will be allowed to operate any terrestrial repeater at more than 2 kW EIRP other than (a) those repeaters previously identified by XM and Sirius in their applications for special temporary authorization, and (b) those repeaters that have been fully coordinated with all potentially effected WCS licensees.

- Each SDARS licensee will be required to operate all of its terrestrial repeaters at or below 2 kW EIRP by December 31, 2006; however, if it can obtain written consent from all potentially affected WCS licensees in a given market, the SDARS licensee may exceed the 2 kW cap to the extent agreed.

- If, prior to December 31, 2006, a WCS licensee determines in good faith that it is about to enter a new market, it must give written notice to any SDARS licensee operating high power repeaters in that market. If they have not already done so, the SDARS and WCS licensees may attempt to coordinate the use of repeaters operating at more than 2 kW EIRP. Unless the SDARS and WCS licensees reach a mutually acceptable coordination agreement, all SDARS terrestrial repeaters operating in the market must do so at no more than 2 kW EIRP within six months after the initial notice from the WCS licensee.

- In those markets where WCS networks are already in operation as of the date the Commission adopts final rules in this proceeding, the six-month transition period to a standard power terrestrial repeater network will begin to run immediately. In addition, if any particular SDARS high power repeater causes interference to the operation of a WCS base station or customer premises equipment in such a market within the initial six-month period, upon written notice of the problem from the WCS licensee the SDARS licensee shall immediately reduce the power of such repeater to no more than 2 kW EIRP.[39]

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[38] The WCS Coalition supports a requirement like that proposed in the PN such that SDARS licensees must provide notice to any WCS, MDS, or ITFS licensee that is licensed in the vicinity of a standard power repeater currently in operation brought into operation after the final SDARS rules have become effective. *See* 66 Fed. Reg. at 58698.

[39] The WCS Coalition submitted this proposal in October. *See* WCS Sunset Letter, *supra.*

This "sunset" proposal, unfortunately, was not specifically referenced or discussed in the Bureau's PN.

The sunset proposal proceeds from a number of sound spectrum management principles, including the following: (1) Commission rules should seek to maximize efficient use of spectrum and minimize the interference environment; (2) rules should be based on the concept of regulatory parity, and should not favor one service over another; (3) disparities in signal strength between networks operating in a band will increase interference; (4) actions undertaken at a licensee's own risk are not a legitimate justification for generally applicable service rules; and (5) once an equitable default rule is established, licensees should be free to negotiate market-based solutions that permit the use of non-standard operations. The sunset proposal allows SDARS operators to use high power repeaters where they would have no detrimental impact upon WCS networks. At the same time, it establishes the clear policy that, unless all affected parties can reach a mutually acceptable coordination agreement, no further high power deployment will be allowed as that would exacerbate the problem in this band.

The sunset proposal establishes a generous transition period of more than five years, with special allowances for accelerated transition where warranted in specific markets. This will enable the SDARS licensees to make productive use of their experimental facilities for an extended period of time while re-planning their networks. At the end of the transition period, all SDARS repeaters – like all WCS, MDS/ITFS, and PCS transmitters – would generally be limited to no more than 2 kW EIRP. However, because SDARS licensees wish to operate at higher powers and WCS licensees wish to limit the number of repeaters deployed, there will be significant market incentives for the

parties to negotiate coordination agreements wherever possible. This market-based system is far preferable to a regime that places too much bargaining power in the hands of one side or the other.

Unlike the PN's proposal, which focuses on retrospective "compensation," the sunset proposal appropriately focuses on the prospective prong of the Commission's *WCS Recon Order* – namely, a 2 kW EIRP power cap. Thus, in addition to being fair, equitable, and sound policy, it is also consistent with the only Commission precedent for dealing with blanketing interference in this band. Accordingly, unlike the Bureau's proposal, the sunset approach would not be an arbitrary and capricious departure from recent precedent directly on point.

CONCLUSION

The record evidence demonstrates conclusively that high power SDARS terrestrial repeaters will cause harmful interference to WCS receivers, both at the base station and at consumers' premises. Although the Bureau acknowledges the problem, it does not adequately craft an appropriate solution. The Bureau ignores past Commission precedent for resolving blanketing interference in this band without explaining its reason for doing so, and thus focuses only on compensation rather than on power reduction. Moreover, even within the confines of its own limited agenda, the PN fails to recognize the full extent of the costs imposed by high power SDARS repeaters, as it excludes many types of costs and the most prevalent type of equipment – CPE – from its compensation proposal. Unlike the situation involving legacy MDS/ITFS equipment, the compensation proposed here is largely illusory.

The WCS Coalition has proposed an alternative, "sunset" approach that would, consistent with prior Commission precedent in this band, ultimately restore the 2 kW EIRP standard for all services after a very lengthy transition period. It would, moreover, allow individual licensees to come to agreement on the use of higher power levels where that is mutually beneficial and rational. Thus, regulatory parity and market forces – rather than regulatory fiat -- would dictate deployment for both services. Accordingly, the Commission should reject the PN's proposal and adopt the WCS Coalition's sunset proposal.

Respectfully submitted,

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